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ABSTRACT

This paper presents the results of an evaluation of CHOICES, a career information system developed by the Canada Employment and Immigration Commission, and implemented in Canada Employment Centers (CECs). Two instruments were designed for this evaluation: a questionnaire for clients who had just used CHOICES, and one for counselors who work with clients who use CHOICES. The client questionnaire assessed users' self-perceptions about whether CHOICES increased their knowledge. Other measures included estimates of the number of lists produced, and client attitudes towards ancillary materials, preparation, and future plans. The counselor questionnaire was designed to assess the knowledge, attitudes, and experience of counselors currently using the system. All of the comments received in the evaluation supported CHOICES, and were directed toward improving the content and delivery of the program. However, CHOICES is now nearly 15 years old, and significant advances both in computer programming and in hardware have occurred since CHOICES was designed. The introduction of the new National Occupational Classification presents an opportunity for the redesign of CHOICES to meet the concerns of users and counselors alike. (LLL)

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EVALUATION OF
CHOICES, THE COMPUTERIZED CAREER INFORMATION SYSTEM

Paper presented at the
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INTRODUCTION

This paper presents the results of an evaluation of CHOICES. CHOICES was developed by the Canada Employment and Immigration Commission and implemented in Canada Employment Centres (CECs) in 1979.

CHOICES is a career information system, designed to assist users to explore occupations within the context of career counselling. CHOICES was designed to be used as part of a process which would be mediated by counsellors, but at the same time to be totally client-operable, with minimal counsellor assistance.

Although a parallel (but not identical) commercial version exists, this evaluation was limited to the version of CHOICES maintained by the Career Information Directorate of Employment and Immigration, and used in 54 CECs across Canada.

METHOD

Participants

Because of the general practice of having clients use CHOICES only as part of a counselling process, both counsellors and clients were included in this evaluation.

Instruments

Two instruments were designed for this evaluation: a questionnaire for clients who had just used CHOICES, and one for counsellors who work with clients who use CHOICES.

Client Questionnaire. Information about potentially appropriate outcomes for this evaluation was sought through an extensive review of the literature on the impact of computerized career information systems in general. Many of the outcomes accruing to users of career information systems are difficult to assess in the short term. Evaluations of computerized career information systems have typically assessed user outcomes shortly after using the system. However, this approach does not account for the effects of multiple usage of the system, or for longer-term effects.

The most obvious goal of career information systems is to increase the amount of **knowledge** that users have about occupations. Much research provides evidence that knowledge about occupations increases as a result of using such systems (Jones, 1976; McDonald, 1985; Rayman, Bryson and Bowlsbey, 1978).

It is also apparent in the literature that using career information systems increases users' **awareness of the relationship of interests, aptitudes and values** to occupational choice (Rayman, Bryson and Bowlsbey, 1978). However, there is little evidence in the literature that computerized career information systems have any impact on **career decision-making** or **career maturity.** One weakness of the literature in the area of the impact of career

information systems is that the majority of subjects in the studies are junior and senior high students. To date, very little research has been conducted with adults.

The goal of CHOICES, like other career information systems, is to increase knowledge about occupations. Other outcomes, such as career maturity or decision-making, are clearly secondary to this goal, and it is doubtful that they are enhanced by any career information systems. Therefore, it was decided to limit the evaluation of outcomes to users' self-perceptions about whether CHOICES had increased their knowledge, and estimates of the number of lists produced by interactions with CHOICES. Other measures in this evaluation included attitudes towards ancillary materials, preparation, and future plans.

Counsellor Questionnaire. A counsellor questionnaire was designed to assess the knowledge, attitudes and experience of counsellors who currently use the system. The questionnaire included estimates of usage by clients, perceptions of the adequacy of ancillary materials, preferred routes within the program, time required for briefing clients, evaluation of professional training and on-going support, use of the database for non-counselling purposes, and related issues.

Procedure

In January 1990, client and counsellor questionnaires were mailed to 192 CHOICES counsellors across Canada. These counsellors had previously been contacted by the Career Information Directorate of CEIC to enlist their cooperation, and it should not be assumed that the resulting sample is random. Client questionnaires were mailed in a ratio of 2.5 to one counsellor questionnaire. Over the next several weeks, 104 completed counsellor questionnaires and 82 client questionnaires were returned.

RESULTS

Characteristics of Client Respondents

Seventy percent of clients who responded to the survey were female, and 30% were male. About one-quarter (26%) indicated that they never use a computer, while 53% sometimes use one, and 21% often use one. English was reported as the first language of 96% of client respondents.

About 46% of client respondents had graduated from high school, while about 40% had some post-secondary education or training. The remaining respondents had not completed secondary school.

About 37% of client respondents indicated that they are currently employed, while 54% are unemployed. Full-time students account for 6% of the sample, and part-time students for 3%.

Characteristics of Counsellor Respondents
Counsellors who responded to the survey have a great deal of experience as counsellors in CECs: on average, 10.6 years. Counsellor respondents have been using CHOICES with clients for an average of 6.4 years. These counsellors report that they assist an average of eleven clients with CHOICES each month. Two-thirds of counsellors who responded assist 25 or fewer clients per month.

Counsellor Training for CHOICES
Three-quarters (76%) of counsellors indicated that they had some training to assist clients using CHOICES. For 63% of these counsellors, total training on the system was one day or less, while 24% indicated they had two or three days training. Nearly two-thirds (63%) of all counsellors who responded believe there is a need for more pre-service training with CHOICES.

When asked to specify what type of training counsellors would like, a wide variety of responses were provided. Many counsellors suggested that they would like more "hands on" training with real clients. Others wanted training on how CHOICES fits into career counselling in general, or on specific files, in particular, the Education and Training File and the Linkage File.

More than half (55%) of counsellors believe there is a need for additional training once a counsellor has had actual experience using CHOICES with clients.

Preparing Clients to Use CHOICES
Almost all (96%) of client respondents indicated that they had a session where a counsellor gave them a **Handbook of CHOICES and Decision Guide** to complete. Clients report that this session averaged 44 minutes, and 97% of clients feel that this was long enough.

About 57% of clients and 59% of counsellors indicate that this initial orientation takes place in an individual session. 62% of counsellors prefer individual sessions, because it allows for "more personal service", and because "any misunderstandings are caught and cleared up immediately in individual sessions". A few counsellors indicated that they use individual sessions simply because low demand by clients would mean that people would have to wait too long for a group to be formed.

On the other hand, some counsellors stated that they conduct group orientation sessions because there is "not enough staff to do individual sessions". It appears, then, that the number of clients wishing to use CHOICES has an impact on the type of session provided at a particular CEC. Several counsellors suggested that Employment and Immigration should develop an instructional video to use at group sessions, showing clients how to work through the **Handbook and Decision Guide.**

The Handbook
All clients who responded to the survey report that they completed the **Handbook** before signing on to the computer. The **Handbook** is rated as very easy by 47% of clients, and somewhat easy by 49%. On average, clients report that it took a mean of 63 minutes to complete the **Handbook**, although some clients reported spending as long as three hours.

Two-thirds (65%) of clients reported that the **Handbook** was very helpful in preparing them to use CHOICES, while 35% rated it as somewhat helpful. These findings correspond very closely to those of Macfarlane (1985), who carried out a study of CHOICES with high school students in North York. Macfarlane reported that 92% of high school students found the **Handbook** somewhat or very helpful in clarifying their interests, abilities and goals.

Clients do not rate all sections of the **Handbook** as equally helpful, however. The Explore and Examine sections of the **Handbook** are rated as most helpful, while Relate, Education and Training File, and Linkage File are rated as less helpful.

Counsellors were asked to rate the difficulty of the **Handbook** for various client subgroups. The results for this analysis are presented in Table 1; in this table, 1 = very easy, 4 = very difficult. Counsellors believe that young people just out of school find the **Handbook** easiest, and special needs clients find it most difficult.

Table 1 about here

No doubt completion of the **Handbook** is made easier by the group and individual orientation sessions conducted for clients, and by the review of completed **Handbooks** before clients actually sign on to the system. In the light of this necessity for preparation to complete the **Handbook**, however, it cannot really be considered as a "stand-alone" document. Several counsellors and clients suggested that the **Handbook** would be less daunting if it were broken up into a number of smaller booklets.

A further concern about the **Handbook** is whether it is an adequate preparation for the actual interaction on the system. A number of counsellors suggested that the **Handbook** should contain more explanation so that clients can understand better from the **Handbook** how the system works.

Estimating Aptitudes and Interests
Two sections of the **Handbook and Decision Guide** deal with aptitudes and interests. Virtually all (93%) clients indicated that they had

attempted to estimate their aptitudes using the structure provided in the **Handbook**. However, only 32% were very confident that they had estimated their aptitudes accurately, while 62% were somewhat confident, and 5% not at all confident. Counsellors estimate that 50% of their clients can accurately estimate their aptitudes.

Similarly, 93% of all clients attempted to estimate their interests as a preparation for CHOICES. Clients indicate that they are more confident that they can estimate their interests rather than their aptitudes; 47% were very confident that they had estimated their interests accurately, and 51% were somewhat confident.

Counsellors, too, believe that it is easier for clients to estimate their interests, indicating that about 67% of their clients can accurately do so.

Counsellors were asked to make any other comments they might have about the **Handbook**. A large number of counsellors provided suggestions. Of particular concern to counsellors is the section on aptitudes. While a number of counsellors commented that the aptitude questionnaire is very useful, there are concerns about the way the section is currently presented. The aptitude questionnaire is seen as confusing for many clients. For example, one counsellor stated:

> Page 9 explains how [aptitude] levels are measured: 1 is for high, 5 for low. Then on page 14, the explanation for deciding on ability levels shows a scale where 1 is low and 5 is high. Even though these represent two different measurement scales, they often confuse clients because they are not consistent.

Using CHOICES

About two-thirds (64)% of clients indicated that a counsellor had reviewed the completed **Decision Guide** before the client signed on to CHOICES.

Despite the preparation provided in group and individual sessions, and the completion of the **Handbook and Decision Guide**, 62% of clients report that they needed assistance from a counsellor while signed on to CHOICES. Similarly, counsellors feel that they should monitor 54% of their clients while they are using CHOICES. Counsellors estimate that they spend 30 minutes with each client who requires monitoring. At some CECs, there are counsellor-helpers or other technical assistants who provide this monitoring to clients.

Half of all clients reported that a counsellor sat with them at least part of the time they were signed on to the system. The length of time counsellors spent with these clients while they were signed on to CHOICES is presented in Table 2.

Table 2 about here

Clients do not appear to have very much difficulty with the level of language used with CHOICES. In response to the question "Was the language used by CHOICES clear and easy to understand?", 85% of clients responded, "yes, always". The difficulty of vocabulary was reported as just about right by 79% of clients, and only 1% thought it was a bit too difficult. These results are very similar to those of Macfarlane (1985), who found that only 16% of students in Grades 11, 12 and 13 reported having any difficulty with the language used in CHOICES.

Counsellors, too, view the level of language used by CHOICES favourably: 67% of counsellors rate the clarity of information given by CHOICES as good, and 21% rate it as excellent. 89% of counsellors rate the difficulty of vocabulary as just about right. It should be kept in mind, however, that there are undoubtedly two factors which would serve to keep clients who might have more difficulty from using CHOICES: self-selection and screening by counsellors. It is not known to what extent these two factors reduce the numbers of people who have access to CHOICES.

CHOICES Files

CHOICES is comprised of three major files: **Occupations**, the **Education and Training File** and the **Linkage** File.

Within the CHOICES **Occupations** file, three major routes are available to users: Explore, Examine and Relate. **Explore** allows a client to enter personal characteristics such as aptitudes and interests, and characteristics of desired work, such as earnings, career fields and physical activities. The program then combines these characteristics to select one or more lists of compatible occupations. In **Examine**, a user can ask for detailed information about any occupation in the CHOICES database. In **Relate**, a user can find occupations with characteristics similar to one already of interest.

The **Education and Training File** provides information about school and apprenticeship programs, admission requirements, tuition fees, certification and regulation, and so on.

The **Linkage File** enables users to determine what training is required for specific occupations (by entering a CCDO code), or to determine what occupations are typically entered by graduates of specific programs (by entering a program code).

Counsellors and clients were asked to report how often each route had been used. The results are presented in Table 3.

Table 3 about here

The reason for the difference between estimates of counsellors and self-reports by clients is not clear. Actual usage figures maintained by the Career Information Directorate show a usage ratio more in line with that reported by counsellors. Because of the method of distribution of the questionnaire -- through counsellors to clients, who completed the questionnaire at their leisure on a voluntary basis -- respondent self-selection in the survey may account for this difference. This explanation would suggest that respondents were more committed to the use of CHOICES than non-respondents, and made a more complete use of the system.

Explore and Examine are the two most favourably rated routes by both clients and counsellors, being rated on average as good to excellent. Clients and counsellors both rate the Education and Training File and the Linkage File least positively, although counsellors are more negative than clients. Client and counsellor ratings are presented in Table 4; in this table, 1 = excellent, 2 = good, 3 = fair, 4 = poor.

Table 4 about here

The **Relate** route was criticized by some counsellors as not having a clear purpose, although a number of counsellors indicated that they would like more training in using Relate. Similarly, counsellors feel that many clients have difficulty understanding this route.

The **Education and Training** File received numerous criticisms for being outdated and for not being complete, and for being cumbersome and difficult to use. Several counsellors stated that the file could be more useful if it were more comprehensive, that is, if it contained information not currently collected, for example, information on high school courses and prerequisites and on-the-job training.

Like the Education and Training File, the **Linkage** File was criticized for having outdated information, for being hard to understand (both for counsellors and clients), and for not having a well-defined purpose. Similarly, counsellors want more training using Linkage.

Topics

Within the Occupations File, clients have the option of considering nine topics in Explore. Clients who had used Explore were asked which topics they had used. Results are presented in Table 5. These results suggest a relatively thorough use of topics by client respondents to this survey.

Table 5 about here

While the order of topics is fixed in the **Handbook**, clients must choose an order for topics when they are working in CHOICES. Several counsellors reported that clients seem to have some difficulty choosing topic order.

Time on CHOICES

Clients reported that they spent, on average, 85 minutes on CHOICES. Two-thirds of respondents indicated that they spent between 50 minutes and two hours on the program.

Career Information

During their time on CHOICES, clients averaged eight lists of occupations; two-thirds of respondents received between one and 15 lists of occupations. CHOICES suggested at least some occupations that 90% of clients would like to follow up on. This compares very favourably with other systems. However, some CHOICES users did comment that they would like the ability to access more information about specific occupations through the system.

Counsellors were asked their opinions on the quality of occupational information presented in CHOICES. Results on this question are presented in Table 6; in this analysis, 1 = very satisfactory, 3 = not sure, and 5 = very unsatisfactory.

Table 6 about here

Counsellors are most satisfied with appropriateness of occupational titles presented to clients. However, many counsellors commented that CHOICES presents clients with some occupational titles which are not appropriate to their region, for example, "ship's captain" and "grain trader". It appears that further screening of occupations within provinces might be beneficial for those clients who do not anticipate relocating.

Counsellors find the number of occupations presented to clients somewhat satisfactory.

The range of occupations presented to clients was rated slightly less positively than the number of occupations presented. Several counsellors commented that the range would be much more appropriate for clients if the individual's existing skills could be taken into account. A few commented that the occupations suggested by CHOICES tend to be at higher skill levels, and only rarely have entry possibilities. Many counsellors commented that the database of occupations is not large enough and needs to be expanded, and some would like to see all occupations included.

Employment trends are rated at 2.7. There is some sentiment among counsellors that information about employment trends is outdated. More updated information could allow regional skills shortages to be considered within the database.

Earnings receive the lowest rating from counsellors, at 3.3 (somewhat unsatisfactory). Numerous counsellors commented that the earnings information is outdated, with the result that earnings are too low. Since wages and salaries vary widely from region to region, it is perceived that earnings do not reflect local wage rates. Some counsellors commented that earnings, in particular, requires some type of reference date in the file so that earnings could be verified.

CHOICES and Other Sources of Career Information
Clients were asked to indicate sources of information they had accessed other than CHOICES. Only 9% indicated they had not looked elsewhere. The percent of clients indicating that they had looked to other sources for career information is presented in Table 7.

Table 7 about here

CHOICES is the **only** computerized career information system used by 97% of client respondents.

Clients were asked to compare CHOICES with other sources of career information. Only 3% rated CHOICES as not as good as other sources, and 21% found it about the same as other sources. 47% found the CHOICES system somewhat superior, and 30% found it far superior. Other research supports the finding that computerized systems are superior to print materials for career exploration; for example, Reardon, Bonnell and Huddleston (1982) found that university students overwhelmingly preferred CHOICES to the Self-Directed Search (Holland, 1982).

Perceived Outcomes of CHOICES
CHOICES users were asked whether CHOICES had a number of specific outcomes. The results on this question are presented in Table 8.

Table 8 about here

The very high proportion of respondents agreeing with each of these outcomes is notable. Nearly nine out of ten respondents indicated that CHOICES had motivated them to look for more information about occupations. CHOICES appears to be effective in terms of increasing knowledge about occupations, and in increasing awareness of the importance of interests, aptitudes and values. Over half of all respondents indicated that CHOICES had helped them to make a decision about career or education. These ratings indicate a very strong impact of CHOICES on users who responded to the questionnaire.

Overall Rating of CHOICES

Clients and counsellors were both asked to provide their overall rating of CHOICES. Clients are somewhat more positive than counsellors, and are more homogeneous in their opinions. Nevertheless, 78% of counsellors rate CHOICES as excellent or good. These findings are presented in Table 9.

Table 9 about here

Attitudes towards a Skills-Based Version

Counsellors were asked about their attitudes towards a potential skills-based version of CHOICES. The major reason for developing a skills-based system would be to enable clients with work experience to encode their experience using a skills inventory, and the program would then select occupations which match this experience. Two-thirds of counsellors (68%) responded that they were not sure, and a number wrote in comments that they did not know what a skills-based version would entail. However, 23% responded that a skills-based system would be significantly better than the present version of CHOICES, and 7% thought it would be a bit better. It can be concluded that the majority of counsellors do not know very much about how a skills-based system would operate.

CONCLUSIONS

CHOICES is a widely-used career information system which has the respect of counsellors and users alike. CHOICES is a proven tool in the provision of career information. There is no question that there is a need for such a system. All the comments received in

the present evaluation support CHOICES, and were directed towards improving the content and delivery of the program.

However, CHOICES is now nearly 15 years old. Significant advances both in computer programming and in hardware have occurred since CHOICES was designed. The program relies completely on the written word and is presented on monochrome monitors. Younger users, especially, will have been exposed to more dynamic and colourful applications. The introduction of the new National Occupational Classification presents an opportunity for the redesign of CHOICES to meet the concerns of users and counsellors alike.

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Table 1:
Counsellor Ratings for the Difficulty of
The **Handbook** for Various Types of Clients

	mean
young people just out of school	2.0
UI claimants	2.1
clients who need training	2.2
women reentering the workforce	2.3
displaced older workers	2.7
special needs clients	3.2

Table 2:
Client Reports of Length of Time
Counsellor Spent Monitoring
While on CHOICES

	percent
the whole time	17
more than half the time, but not all	5
about half the time	8
less than half the time	19
not assisted at all	50

Table 3:
Client Self-Reported Use
and Counsellors' Estimates of Use
of CHOICES Routes and Files (%)

	percent	
	Client Self-Report	Counsellor Estimate
Explore	98	94
Examine	93	73
Relate	64	26
Education and Training File	57	26
Linkage File	55	19

Table 4:
Mean Counsellor and Client Ratings
of Routes and Files

	mean	
	Clients	Counsellors
Explore	1.8	1.7
Examine	1.7	1.6
Relate	2.1	2.2
Education and Training File	2.2	2.7
Linkage File	2.2	2.7

Table 5:
Clients using Each Topic

		percent
1.	education level	93
2.	aptitudes	91
3.	physical demands	84
4.	earnings	88
5.	interests	93
6.	career fields	85
7.	work arrangements	65
8.	physical activities	66
9.	environmental conditions	70

Table 6:
Counsellor Ratings of Features of
Occupational Information

	mean
occupational titles	2.2
number of occupations presented to clients	2.3
range of occupations presented to clients	2.6
employment trends	2.7
earnings	3.3

Table 7:
Clients' Reports of
Other Sources of Career Information

	percent
newspapers	70
friends or relatives	59
books	41
library	33
other counsellors (not CEC)	27
magazines	26
school guidance counsellor	15
another computerized program	3

Table 8:
Clients' Self-Perceptions of
CHOICES Outcomes

	% yes
Did using CHOICES...	
motivate you to look for more information about occupations?	88
help you to learn anything about yourself?	83
increase your knowledge about some occupations?	83
increase your awareness of the importance of interests, aptitudes and values in choosing an occupation?	82
help you to learn anything about the world of work?	68
help you to make a decision about your future career?	65
help you to make a decision about your future education?	58